

WHAT IS CLAIMED IS:

1. A storage system comprising:
a host apparatus; and
a first storage control apparatus for controlling operations to write data into a storage device serving as a target specified by the host apparatus and read out data from the storage device;

wherein the first storage control apparatus comprises:

a first processing unit connected to the host apparatus and usable for processing a command received from the host apparatus;

a cache memory for temporarily storing data received from the host apparatus;

a memory for storing management information of the storage system; and

a second processing unit used for controlling an operation to transfer data stored in the cache memory to the storage device and connecting the storage system to a second storage control apparatus.

2. A storage system according to claim 1 wherein the first storage control apparatus generates a pair relation between a logical device on a first storage device under control of the first storage control apparatus

and another logical device on a second storage device under control of the second storage control apparatus.

3. A storage system according to claim 2 wherein the management information stored in the memory includes control information, device information and data-discrepancy management information, which are provided for the first and second storage control apparatus.

4. A storage system according to claim 1 wherein the second storage control apparatus has two or more logical devices on storage devices controlled by the second storage control apparatus, and the memory employed in the first storage control apparatus is also used for storing management information for managing pair states of the two or more logical devices.

5. A storage system according to claim 4 wherein the management information includes data-discrepancy management information including data-difference information, usable when the pair state of the logical devices on storage devices controlled by the second storage control apparatus is a split state.

6. In a storage system coupled to a host apparatus a first storage control apparatus for controlling operations to write data into a storage device serving as a

target specified by the host apparatus and read out data from the storage device, the first storage control apparatus comprising:

a first processing unit connected to the host apparatus usable for processing a command received from the host apparatus;

a cache memory for temporarily storing data received from the host apparatus;

a memory for storing management information of the storage system; and

a second processing unit used for controlling an operation to transfer data stored in the cache memory to the storage device and connecting the storage system to a second storage control apparatus; and

wherein when receiving the command, the first processing unit references the management information held in the first storage control apparatus to determine whether the command is a command issued to a logical device on a storage device controlled by the first storage control apparatus or a command issued to a logical device on a storage device controlled by the second storage control apparatus.

7. A storage system according to claim 6 wherein, if the command is determined to be a command

issued to a logical device on a storage device controlled by the second storage control apparatus, the first or second processing unit carries out a command-equivalence conversion process for converting the command into an equivalent command controllable by the second storage control apparatus.

8. A storage system comprising:

a first storage control apparatus for controlling operations to read out data from a storage device serving as a target specified by a host apparatus, the first storage control apparatus including:

a first storage device for storing data;

a first processing unit connected to the host apparatus and used for processing a read command received from the host apparatus; and

a second processing unit for reading out the data from the first storage device and storing the data in a cache memory in accordance with a processing result generated by the first processing unit; and

wherein the storage system further includes a second storage control apparatus connected to the second processing unit, the second storage control apparatus including:

a third processing unit for processing a read command received from the second processing unit;

a second storage device controlled by the second storage control apparatus; and

a fourth processing unit for reading out the data from the second storage device in accordance with a processing result generated by the third processing unit.

9. A storage system according to claim 8 wherein the first storage control apparatus further includes a memory for storing management information for a logical device defined on the second storage device.

10. A storage system according to claim 9 wherein the management information includes management information of a pair logical devices including a logical device on the second storage device.

11. A storage system according to claim 10 wherein the management information includes information on differences in data between logical devices forming a pair including a logical device on the second storage device.

12. A storage system according to claim 11 wherein the first or second processing unit determines whether data specified by a read instruction received from the host apparatus is to be read from a logical device

controlled by the first storage control apparatus or from a logical device controlled by the second storage control apparatus on the basis of the information on differences in data.

13. A control method adopted by a storage system including a first storage control apparatus having a first storage device and a second storage control apparatus including a second storage device connected to the first storage control apparatus, the control method comprising:

allowing the first storage control apparatus to receive a data write or read command from a host apparatus;

determining whether the data write or read command received from the host apparatus is to be executed by a data operation involving the first storage device or a data operation involving the second storage device based upon management information in the first storage control apparatus; and

writing data into the first storage device or the second storage device or reading out data from the first storage device or the second storage device based upon the step of determining.

14. A control method adopted by a storage system having a host apparatus and a first storage control apparatus for controlling operations to write data into a

storage device serving as a target specified by the host apparatus and read out data from the storage device, and in which the first storage control apparatus includes:

- a first processing unit connected to the host apparatus and used for processing a command received from the host apparatus;

- a first storage device for storing data specified in a write command received from the host apparatus;

- a cache memory for temporarily storing data specified in a write command received from the host apparatus or data read out from the first storage device in accordance with a read command received from the host apparatus;

- a memory for storing management information of the storage system; and

- a second processing unit used for controlling an operation to transfer data stored in the cache memory to the first storage device and connected to a second storage control apparatus for controlling a second storage device;

- the control method comprising:

- allowing the first processing unit to receive a data write or read command from the host apparatus;

- determining whether a command received from the host apparatus has been issued to a logical device on the

first storage device or a logical device on the second storage device on the basis of the management information; and

providing a control command to the second storage control apparatus if the step of determining indicates that a command received from the host apparatus has been issued to the logical device on the second storage device.

15. A control method according to claim 14, further comprising allowing the first or second processing unit to carry out a command-equivalence conversion process for converting the control command into an equivalent command controllable by the second storage control apparatus in providing the control command to the second storage control apparatus.

16. A control method according to claim 14, further comprising the step of creating a logical-device pair comprising the logical device on the first storage device and the logical device on the second storage device, whereby, when a write instruction issued to a specific one of the logical devices composing the logical-device pair is received from the host apparatus, information on updating of the specific logical device is stored as difference information in the management information.

17. A control method according to claim 16, further comprising the step of forming a judgment as to whether data is to be read out from the logical device on the first storage device or the logical device on the second storage device by referencing the difference information when a command to read out the data is received from the host apparatus.